

**Comments on texts resulting from the Terrestrial Animal Health Code Commission Report – September  
2005 Meeting  
Submitted by the United States of America**

APPENDIX 3.8.X.

GUIDELINES FOR THE INACTIVATION  
OF THE AVIAN INFLUENZA VIRUS

Article 3.8.X.1.

**Suggested Recommendations:**

**Egg and egg products**

The following industry standard procedures are suitable for the inactivation of highly pathogenic notifiable avian influenza (HPNAI) virus present in egg and egg products:

	Temperature (°C)	Time
Whole egg	60	210 seconds
Whole egg blends	60	372 seconds
Whole egg blends	61.1	210 seconds
Liquid egg white	55.6	372 seconds
Liquid egg white	56.7	210 seconds
10% salted yolk	62.2	372 seconds
10% salted yolk	63.3	210 seconds
Dried egg white	<del>67</del> See Table X below	<del>15 days</del> See Table X below

Other time/temperature combinations may be used to achieve a 7 Log<sub>10</sub> EID<sub>50</sub>/gm AI inactivation.

**Rationale/Comments:**

With one exception the temperature and times listed for the destruction of HPNAI virus in egg products are in accord with research conducted by Dr. David Swayne. As the OIE may now be aware, the proposed time/temperature parameters for “dried egg whites” are incorrect. The combination of 67°C for 15 days is approximately 10 times more severe than that needed for the effective destruction of the virus. Based on Dr. Swayne’s studies a range of effective heat treatments for dried egg whites is suggested in the Table X below.

The United States recommends adding the suggested language because the time/temperature options provided in the table are somewhat restrictive in scope. Dr. David Swayne's work established both “D” and “Z” values for AI inactivation in eggs. Having determined these values allows other time/temp combinations to be assessed for equivalence. For example, 65C for 2.5 minutes achieves a higher kill than does 60C for 3.5 minutes.

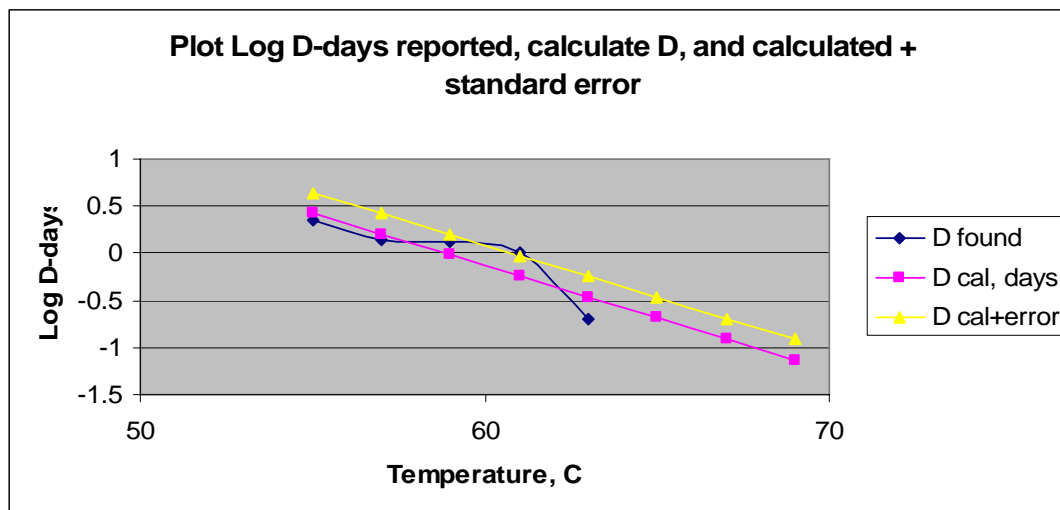
- The data presented in Swayne and Beck (2004) is useful in determining a range of effective pasteurization processes for dried egg whites that would be expected to provide 7 log<sub>10</sub> EID<sub>50</sub>/gm AI inactivation. The following table presents D-values reported by Swayne and Beck (2004) for dried egg white with extrapolation to estimate D-values a up to 69°C and D-values adjusted to include the standard error of Y on X as a safety factor.

**Summary of Reported and Calculated D-values from Swayne and Beck (2004)  
with days at temperature to achieve 7-log kill\* of HPAI/PA/83 in dried egg whites.**

Temp, C	Temp, F	Reported	Calculate	Cal + error	Days for 7-log reduction
55	131	2.2	2.7	4.4	30.8
57	134.6	1.4	1.6	2.6	18.5
59	138.2	1.3	1.0	1.6	11.0
61	141.8	1	0.6	0.9	6.6
63	145.4	0.2	0.3	0.6	4.0
65	149		0.2	0.3	2.4
67	152.6		0.1	0.2	1.4
69	156.2		0.1	0.1	0.8

\*7-log reduction using calculated D-values plus the standard error of Y on X equation for the line using Swayne and Beck data is  $y = -0.111445 * \text{Temp} + 6.55599$

A graphical presentation is presented below.



The original data from Swayne and Beck (2004) provides an excellent basis for determining safe minimum pasteurization processes. As can be seen in the Table, 15 days at 67°C would be excessive, approximately 10 times greater than required to give a 7 log 10 reductions assuming a D-value conservatively corrected for error.

**Recommendation:**

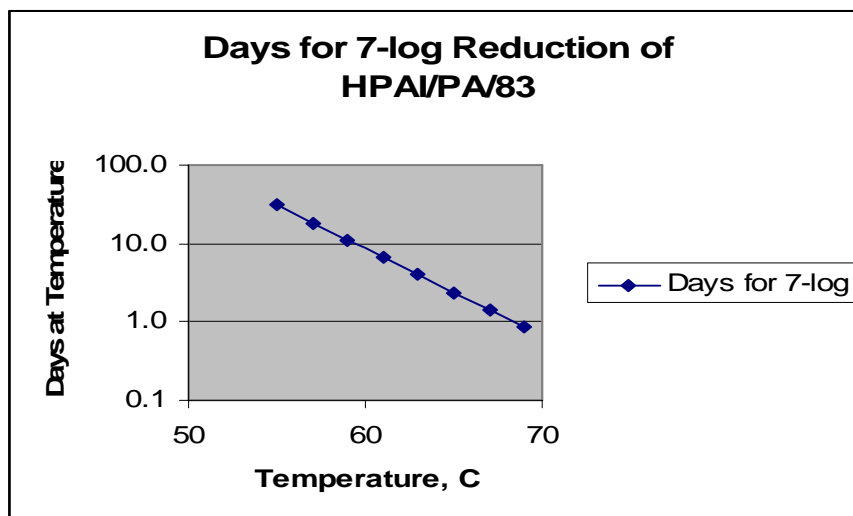
For a pasteurization standard for dried egg whites, adopt a range of minimum time and temperature conditions to provide a 7 log<sub>10</sub> EID<sub>50</sub>/gm AI inactivation. Those conditions are summarized in the following table.

**Table X**

Temperature, ° C	Temperature, ° F	Days at Temperature
55	131	30.8
57	134.6	18.5
59	138.2	11.0
61	141.8	6.6
63	145.4	4.0
65	149	2.4
67	152.6	1.4
69	156.2	0.8

Providing a standard expressed as a range of conditions at or above the minimums would provide flexibility for processors and clarity when communicating with various veterinary authorities involved in reviewing veterinary and sanitary certificates used in international trade.

An alternative approach would be to choose conditions on or above the 7-log reduction line presented on the following figure.



## Suggested language

Article 3.8.X.2.

### Meat (under study)

A procedure which produces a core temperature of 70°C for one second (under study) is suitable for the inactivation of HPNAI virus present in meat.

**Rationale/Comment:** In setting thermal inactivation standards for poultry meat for microbial agents, the accepted method is to generate Dt and Z values so that a time standard for reduction in 5 logs of the microbial agent can be achieved. For highly pathogenic Avian Influenza, the Dt and Z values have not yet been established to make that final calculation. Dr. David Swayne's study on heat inactivation of AI virus in poultry meat is preliminary. Sufficient data was not generated to establish the Dt and Z values. Therefore, it is highly prudent to post-pone setting a final standard until additional studies are completed to obtain the needed data and generate those Dt and Z values.

